

THE MICHIGAN FARMER,

A WEEKLY JOURNAL OF AFFAIRS

Relating to the Farm, the Garden, and the Household.

NEW SERIES.

DETROIT, SATURDAY, OCTOBER 1, 1859.

VOL. 1., NO. 40.

The Michigan Farmer,

R. F. JOHNSTONE, EDITOR.

Publication Office, 130 Jefferson Avenue,
DETROIT MICHIGAN.

The MICHIGAN FARMER presents superior facilities to business men, publishers, manufacturers of Agriculture Implements, Nursery men, and stock breeders for advertising.

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Ten cents per line for each insertion when ordered for one month or less.

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The Farm.

Arrangements for Stock and for Exhibitors at the State Fair.

The main entrance to the fair grounds will be at the corner nearest the city on Woodward Avenue. Here is placed a large semi-circle, on both sides of which are offices for procuring tickets; in its centre is the carriage entrance for visitors, and on either side are the gates for visitors on foot. On the extreme left of the semi-circle is the gate for the entrance of judges, committee-men, and all officers and attendants. Farther up the street, about forty rods, is the entrance for stock of all kinds, this gate being likewise used as a gate of exit after Tuesday.

All entries will be made at the office of the Secretary on the grounds, and as soon as the entries are made the articles must be taken to the positions assigned them, when they will be placed by the superintendents of the several departments.

The entry books will be closed on Wednesday morning at 9 o'clock, and at 10 A. M. of that day the books will be delivered to the several viewing committees, at the office of the Secretary, and at that time all committees should be ready to go to work.

All the members of the viewing committees are requested to report themselves at the Secretary's office, when they will receive their badges and tickets on Tuesday, if present, or at farthest, on Wednesday morning before nine o'clock.

On Wednesday morning at nine o'clock the names of the members of the viewing committees will be called from the President's stand, and at that time vacancies will be filled by the executive committee.

The whole of Tuesday will be devoted to the reception and arrangement of stock and articles for exhibition.

On Wednesday morning the Chief Marshall and his assistants will call out and arrange a cavalcade of all the horses and cattle

entered for competition, and which will march once around the grounds. Immediately after the end of the procession the judges on Shorthorns will commence their duties by ordering the several classes into the amphitheatre in their regular order as designated in the premium list.

At the same time the committee on class 7 of cattle, will also commence their work in the cattle ring, and be followed in their regular order by the committees on the classes that succeed.

Whilst the cattle are being examined, no parade or exercise of horses will be permitted on the track.

At three o'clock P. M., the committee on class 6 of horses will direct the marshals to have the track cleared and the young stock of three years old and under called up for examination.

All persons will be required to keep within the railing.

For the purpose of affording every facility for seeing the trials of horses, a magnificent grand stand, capable of containing two thousand persons, has been erected at a large outlay. The seats on this stand are wide and commodious. For admission to it a fee of ten cents will be charged.

On Thursday the committee on horses of all work will commence their examinations in the amphitheatre, and be followed by the several classes in regular order. The committee on Black Hawks and Morgans will commence their examinations on the track at 8 o'clock, and when they have finished, the committee on trotting stock will resume their examination of the remainder of their class, till finished. This class will be followed by the committee on matched horses, and by the committee on the stable of colts.

The Draught Horses, jacks and mules will be examined in the large ring in the afternoon of Thursday.

On Thursday afternoon there will be a splendid turn-out of the Fire Department and of the Military of Detroit.

All reports of committees are to be handed in at 8 o'clock on Friday morning.

The State Fair and its Appointments.

The business committee, with the advice and approbation of the President of the State Agricultural Society, have made the following arrangements for the government of the State Fair:

The members of the Executive Committee have been designated for the following departments, over which they will have general supervision, and to these members the Superintendents and assistants will refer for advice and direction in all matters with which they may be interested:

Cattle—H. E. De Garmo, of Lyons, and A. Jewell, of Dowagiac.

Horses—J. B. Crippen, of Coldwater, and A. S. Berry, of Adrian.

Sheep, Swine and Poultry—James Bayley, of Troy, and H. P. Sly, of Plymouth.

Agricultural Hall—D. Henderson, of Allegan.

Manufacturer's Hall—W. H. Montgomery, of Ida, Monroe county.

Mechanic's Hall—A. N. Hart, of Lapeer.

Agricultural Implements—J. H. Richardson, of Tuscola.

Floral Hall—H. G. Wells, of Kalamazoo, and J. E. Kitton, of St. Clair.

Gates and Police—Horace Welch, of Ypsilanti.

SUPERINTENDENTS.

The Superintendents appointed in the several departments are as follows:

Floral Hall—E. St. Alary, of Detroit.

Fruits—T. T. Lyon, of Plymouth.

Manufacturer's Hall—E. L. Drake, of Stockbridge, and N. E. Welch, of Ann Arbor.

Agricultural Hall—S. Bowerman and H. V. Knapp, of Detroit.

Mechanic's Hall—J. G. Swan, of Detroit.

Agricultural Implements—Charles Betts, of Bur Oak.

Poultry—Wm. Merritt, of Detroit.

Sheep and Swine—Jesse Frink, of Troy.

Horses—H. B. Smith, of Marengo.

Cattle—David Brown, of Detroit.

Matron of Ladies' Saloon—Mrs. Carter, of Detroit.

MARSHALS.
General Marshal—Sylvester Larned, Esq., Detroit.

Assistant Marshals—R. M. Chittenden, Henry Metz, S. S. Barrows, George Nesbit, F. X. Cicotte, Geo. Niles, of Detroit.

Marshal of the Amphitheatre—E. S. Leadbeater, Detroit.

Marshal of the Cattle Ring—A. P. Young, Romulus.

The Assistant Marshals will be required to report themselves to the Grand Marshal Tuesday morning, and will be under his sole direction during the fair.

GATE KEEPERS.

Gate No. 1—(Carriage entrance) D. Pierce, Ypsilanti; Charles Boylan, Ann Arbor; John M. Kendall, Detroit.

Gate No. 2—(Entrance for committees, exhibitors and attendants) S. P. Swan, of Detroit.

Gates No. 3 and 4—(Entrance for visitors) W. W. Howland, of Detroit, and W. Welch, of Ypsilanti.

Exit Gates—Wm. A. Henry, Detroit; R. Boss.

Ypsilanti; and J. Wilkinson, of Detroit.

Amphitheatre Gates—George Carter and Wm. Kelly.

Grand Stand—Julius Blodgett and Wm. P. Griffin, of Detroit.

The State Fair—Meetings to be Held.

The annual meeting of the members of the State Agricultural Society, at the great exhibition which will take place in Detroit next week, affords opportunities for meetings to discuss matters connected with the agriculture and horticulture of the State which should not be neglected. On this occasion, citizens interested in the progress of agriculture will meet; and there are many subjects which might be discussed, comparisons instituted, and practice recited, were there any method adopted by which those visiting the State Fair could be brought together. To afford the requisite facilities for such an interchange of opinions and such discussions, the Business Committee having represented the matter to S. Dow Elwood, the President of the Young Men's Literary Association, and requested the use of the Hall of the Society. That place of meeting has been placed at the service of the State Society by the officers of the association, and will be open for such meetings on the evenings of Tuesday, Wednesday and Thursday of the week on which the State Fair will be held.

During the days of the fair, there is so much to be seen and examined, there are so many visitors who are attending to their stock, or other articles which may be on exhibition, or in duties connected with the exhibition that there are very few opportunities afforded them for social intercourse, or for an interchange of opinions. Such meetings as are proposed, will give to a great many an opportunity of getting acquainted with citizens of distant portions of the State, of hearing their opinions on the various subjects which may be brought up for discussion, and of giving themselves opportunities to express their views on various matters connected with the farming interests, and of asking and receiving information. We have every expectation that these meetings will prove of the highest interest.

It may be asked, what subjects should be brought forward, and what should be discussed at such meetings, especially as they will be limited in regard to number and as to the time they must occupy. We would suggest, that, as it is probable that all matters cannot be discussed, and that it would promote the objects of the meetings to have the discussions of each meeting confined to some single branch of the agricultural interests, the following division may be adopted, if the meetings are held, with advantage to all.

Let the discussion of the first evening be devoted to the treatment of the marsh lands of the State, the various methods pursued in improving them, the kinds of seed used in rendering them productive of the best kinds of hay. The cost of their improvement, with the details of their plans of ditching and draining. The use of covered drains, and the expense of making them. The treatment

of soils, the use of muck, of marl, and of any other native manures.

The discussions of the second evening might be confined entirely to the treatment of live stock, and the business of breeding and raising it for market or for use. What, for instance, has been the experience of breeders with the full-bred animals, when compared with the half or cross breed, when intended only for market? What kinds are best adapted to the soils and the climate of the different counties? What has been the experience of feeders with crosses of the Shorthorns, and with crosses of the Devons, or with those of any other breed? What kinds of horses are the most profitable for the farmer or breeder to raise? How does the breeding of horses compare for profit with that of cattle? Is it more profitable to work cattle, or horses or mules? What is the experience with mules in this State? Can they be bred with profit so far north? What

are the best methods for the improvement of the horse in this State? What are the most profitable kinds of sheep to keep? How does the actual results of the keeping of long woolled or mutton sheep compare with the keeping of sheep for fine wool? What is the experience of sheep breeders with the French and what with the Spanish Merino? Has sufficient care been taken to keep the flocks of Merinos pure? Are not most of the Merinos tinged with a cross of the so-called Native sheep? How do the profits from the crosses compare with the profits from the pure bred sheep? Have there been any crosses of the Southdown, Leicester or Cotswold, on the Merino, or upon the Native sheep, and what were the results? What breed of pigs are the best for the use of the farm? How do the crosses succeed? What are the best kinds to cross on the natives?—What breeds of hogs afford the most clear mess pork? What breeds are the most profitable to be kept solely for market or home use? What are the peculiarities of the different breeds? What are the largest sized hogs in this State? How do they compare with the large Yorkshire, Berkshire or other English breeds? What is the experience in feeding hogs, &c.? What is the value of corn, and what is the best method of feeding it to animals? Then, again, the whole subject of poultry may be brought up, and all the necessary information elicited with regard to them.

The third evening may be devoted to the discussion of subjects connected with fruit, and its propagation and growth. There are whole hosts of important details upon this subject, which we are sure would draw out an immense amount of instruction and entertainment for all who attend.

In the above, we have sketched enough of matters to keep those who come to the fair busy during the evenings of the meetings.—We have no choice of the subjects ourselves, we have only pointed out how the time may be best occupied, and how the most may be made of them, as well as sketched out the heads of some of the various subjects, which we know to be of unquestionable importance, and a discussion of which will do our farmers the most good. We hope to see quite a number of our best agriculturists present and ready to answer satisfactorily all the questions which may arise during the discussion of the various subjects which we have named above.

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The Fawkes Steam Plow.

Report of the Machinists appointed to test the practical working of the plowing engines at the Fair of the Illinois State Agricultural Society:

GENTLEMEN: The undersigned, a Committee of Machinists appointed to test practically the plowing engines which might compete for an award offered by your Society, and called upon subsequently to reply to certain inquiries, respectfully report:

That there was but one offered for trial which came within the provisions of the resolution. This was invented and patented by Joseph W. Fawkes of Pennsylvania.

To form a complete conception of this steam plow, let the Committee recall the appearance of a small sized tender of a locomotive engine; let about half the forward portion of the sides and tank be removed. We now have something which resembles the body of Fawkes' machine. In the middle of the forward portion of the platform stands the upright boiler, which is about 64 feet high, and four feet in diameter, the fire box and ash pit being of course below the level of the platform, and the fire door opening forward. The boiler contains twenty-two 8½ inch tubes, which, computed together with the fire box, give 375 feet of fire surface.—

Steam may be got up in fifteen minutes, although twice that time is usually necessary. The fuel may either be bituminous coal or wood. The cylinders are horizontal, nine inches in diameter and fifteen inch stroke, and are placed one on each side of the boiler.—

The pistons communicate motion, not to side wheels, but to a drum or roller, six feet in diameter and six feet long, which, as the sides of the platform overhang its end, is comparatively out of sight. The drum is placed about midway between the front and back of the machine; before it depends the fire box, and over and behind it is the tank; so that, when the boiler and tank are full they nearly counterbalance each other on the axles of the driving drum.

This drum is composed of two iron heads, or "spiders," and an intermediate one; to these, thick, narrow planks, cut like staves, and fitting closely, are bolted, and form the periphery. The adhesion is, therefore, produced by a surface of wood six feet long, which never becomes polished, and the bearing of which is always across the grain.—

There is no slipping; the machine is started and stopped instantly; and, except when propelling itself a considerable distance on turnpike and paved roads, the wear and tear is slight. This substitution of the driving roller for the ordinary side-wheels, wonderfully increases traction, and prevents sloughing in wet or yielding soil; while moderate irregularities of surface scarcely affect the onward march of the plow. Another great advantage is gained by the gearing of the drum.—

Instead of being attached directly to a crank on the axle of the drum, each connecting rod communicates motion to a pinion which turns easily, but without shake, on the axle just mentioned. The pinion interlocks with a cog wheel, which by a pinion on its axis imparts motion to the cog wheel bolted to the drum. The whole being so proportioned that six strokes of the piston cause one revolution of the drum.

Increase of power and control over the movement of the engine are thus secured:

The front of the fire box is a short tapering bow of sheet iron, which serves as a seat for the fireman and a receptacle for fuel. The bow is supported by a body-bolt on a truck composed of two iron guide-wheels three and one-half feet in diameter, and fifteen inches broad. The truck moves freely like the front wheels of a chaise, and is controlled by a steering wheel in charge of the engineer, so that the whole machine is turned as readily and as short as a farm wagon. The engine is of thirty-horse power. The entire length of the machine is about eighteen feet; its weight, with water and fuel, ten tons; and cost, including "donkey" engine and pump, about \$4,000. By this pump, water may be drawn from a well or creek, and the tank filled, or water forced from the tank to the boiler. The tank holds twelve barrels, sufficient for three hours' running. The plows, eight in number, are attached to one frame, which is suspended by chains passing over grooved pulleys in two beams, projecting from the seat to the engine. These chains communicate to the windlass in charge of the fireman in front, by which the gang of plows may be raised or lowered at pleasure, and the frame of plows is drawn by other chains which are attached to the under side of the frame of the engine.

In answer to the several questions propounded by your Board touching the capacity and practicability of the engine for farm purposes, we, upon trial and examination, report as follows:

First.—The weight ten tons, as reported by Mr. Fawkes.

Second.—The fuel consumed in one hour was 170 pounds, or two bushels and ten pounds of inferior coal, with one-eighth part of a cord of wood, evaporating about 150 gallons of water, and plowing one acre in twelve minutes (which includes turning).

The wood was mostly of linn, and considerably decayed, and would have been rejected upon steamboats.

Third.—The amount of traction on the different grades of land would be a matter difficult to determine, with the facilities in the hands of the Committee. We had the engine run up the various grades of the fair grounds, passing into a gully with the plows swung in the rear, which struck on one bank as the main roller was raising the other, which overpowered the engine, but upon detaching the plows, the machine moved out without the least difficulty. Upon measurement, the grade was found to be one foot vertical to four on the horizontal line. Steam, by the indicator, was marked at only 62—100 being the ordinary pressure.

Fourth.—The friction produced by the pressure against the shoulder of the axle, instead of being fair on the journals (which are of less size), may possibly make a slight waste of power in running across inclined planes.—The wear and tear would be the same as with any other steam engine used for locomotion.

The engine can safely be run across an inclined plane of 30°, because of its great breadth of base (six feet)—the principal part of the boiler, the heavy fire box, and a great portion of the machinery, being below the centre.

Fifth.—We have previously stated that an acre could be plowed in twelve minutes; but an examination of the following computations will demonstrate its actual performance. A strip of land 240 yards long and 20 feet wide was plowed in four minutes; and the headlands of 50 feet were crossed, one in 27 seconds, the other in 30—the plows being elevated and lowered to and from the ground in the time.

Sixth.—No steam engine in existence should be entrusted to inexperienced persons.

This one is as simple as any we have ever examined, is strong and substantial. It is a locomotive high pressure engine in construction, arranged for reversing at will, and was repeatedly advanced and reversed a few inches at a time with perfect ease, and in a few seconds.

The skill requisite to manage the machine should be acquired in a month by any intelligent American farmer, and your Committee, in view of the certainty of the employment of steam for farming purposes, would strongly recommend that the farmers of Illinois should give especial attention in the education of their sons, to the principles of mechanics and the practical management of steam engines.

Seventh.—The fuel furnished by the Society to your Committee was of such inferior quality as to hardly enable us to demonstrate fully the steam generating capability of the boiler, but by referring to the amount of its fire surface (375 square feet) it will be seen, by practical men, that, with the advantage of an exhaust to create artificial draught, it is fully competent, with ordinary fuel, to generate continuously abundant steam for its work.

In weight of coal and wood on board, and of passengers, it carried, throughout the experiment, as much as would represent the weight of an entire supply of fuel. It would carry water for a three hour's run.

Eighth.—As a stationary engine, her power was tested at Power Hall, where, after jacking up her rear end so that the main drum turned clear of the ground, by applying the power direct to the drum of the roller, 120 revolutions of it were obtained per minute.—

By passing the belt of a fifty feet line of shaft over the drum, the engine propelled one eight horse thresher, one corn and cob mill at work at the rate of 25 bushels per hour, two small iron corn-mills grinding six bushels each per hour, one wood moulding machine, one resawing circular saw of two feet diameter, and a smut machine of high speed, all simultaneously and with only 10 lbs. of steam. From experience with circular saws we estimate it capable of running two of the largest size at one time. It is perfectly competent to go into the timber, haul logs where the ordinary log wagons would be employed, and in one hour be jacked up and furnish power to those of large size.

Ninth.—The fire box being within fourteen inches of the ground, the machine would run without injury through water twelve inches deep. It was run by us over ground where by hand pressure a lath was forced downward fifteen inches, and on examination we were of the impression that the actual compaction of the surface by the machine was not over one

inch. Horses crossing the slough sank to their fetlocks, but, as with the engine the actual surface pressing upon the ground is at all times six square feet, the ability to sustain weight is much greater than with the wagon and team where the weight rests on narrow bases. The four wagon wheels present a surface width of seven inches in all, but the engine with its drum and guiding wheels, a surface of 102 inches. The weight of the engine is ten tons, that of a wagon load of grain one and a half tons, or something more than one sixth as much; but the engine with a drum six feet in diameter, gives a much greater proportional contact with the ground, and its load is proportionally less liable to miring in sloughs.

Tenth.—The difference of power between running the engine on plank or hard road and common prairie would be great; but that between running on ordinary ground and ground so soft that the drum would sink for inches, we have no means of knowing. It is evident, however, from the explanations in the preceding answer, that ground in such condition that a drum six feet in diameter and six feet long would move to that depth, would be entirely unfit to plow, and could not be even crossed by horses.

Having thus in detail answered the interrogatories propounded to us by the Executive Committee, we desire to make some general remarks with reference to the practicability of employing steam for plowing, and other farm purposes. The experiments with Fawkes' steam plow engine have demonstrated to our satisfaction that it is practicable that, in a few years, a large portion of the labor now performed by animal power on the farm will be superseded by steam, especially in prairie countries, and on well improved farms, where but few stones or other obstructions exist.

The engine here exhibited is intended only for large operations, being capable of breaking from 25 to 40 acres per day; but we see no reason why the size may not be reduced very considerably (say to one-fourth), and still successfully compete with animal power. A skilled engineer, sent to witness this trial by the largest machinist of Ohio, has reported favorably to his employer, and a contract has already been made by him with Mr. Fawkes to build a small engine for his farm of 300 acres.

We estimate the cost of plowing by it from the following liberal data:

USED PER DIEM.

One ton of coal	\$5.00
One cord of wood	3.00
Labour of three men, engineer, fireman and assistant	4.00
Oil, &c.	1.00
Ordinary wear and tear	2.00
Interest 10 per cent on \$1,000	1.12
Total	\$16.12

With the most liberal allowance for hauling water and coal one mile, for stoppages and turnings, the machine should plow 25 acres per day. At present contract prices of \$2.50 per acre for prairie breaking, this would cost \$65.50, while by the above estimate it is seen that Fawkes' plows for 62½ per acre.

Your committee regret that accidents to the other competitors, before reaching the ground, should have prevented a test of the comparative merits of the several plans already adopted, and about to be presented to the public. The interest manifested in the progress of this trial, not only by the visitors upon the show grounds, but by the public at large, will, no doubt, stimulate other agricultural bodies to follow the example so nobly set by the Illinois State Agricultural Society, and thus ample opportunity will be afforded for fair competition.

Your committee, in view of the result of their experiments, unanimously recommend that the First Prize of three thousand dollars be awarded to Joseph W. Fawkes, of Christiansburg, Lancaster county, Pa., for his Steam Plow.

All of which is respectfully submitted.

ISAAC A. HEDGES, Cincinnati,
P. W. GATES, Chicago,
A. B. LATTA, Cincinnati.

SUPPLEMENTARY REPORT.

After the foregoing report was closed, the undersigned (in the absence of the other members of the Mechanical Committee, who have left for home) accompanied the Executive Committee to witness a further trial of Mr. Fawkes' engine. It was attached to the plows, and set to work in prairie sod, alongside the former plowings. After proceeding eighteen yards, some of the connections between the plows and engine gave way, when it was discovered that the former were set for plowing stubble ground, and were running 6½ inches deep, causing a resistance that was sufficient to part the connection at a point where wooden pins are used for the express purpose of yielding in case of emergency, that no damage might be suffered by the plows. After this was adjusted, the plows raised to the usual depth for prairie sod, and while crossing the part stubble and part grass

sod, a dashing shower passed over, wetting the ground which was already moist from the heavy rain the night before. This caused the main roller to slip, and Mr. Fawkes having removed the spuds provided for projecting through the drum to prevent slipping in such cases, he nailed some slips on the drum as substitutes, which served well until reaching the sod on an inclined plane, where from their temporary adjustment they came off, and, lodging under the machine, caused it to slide some inches from the line of draught. Mr. Fawkes then raised the plows, and remarked that he preferred not to attempt further trial without the appliances referred to. It is well known to all acquainted with the use of the reaper and mower, that on a slippery surface the driving wheels will sometimes fail to perform their revolutions even with their ribbed surfaces. In conclusion, I would say that the above incidents do not materially lessen the improvement in my estimation.

Respectfully submitted,
[Signed] ISAAC A. HEDGES.

Cost of Wheat.

We have the following from Mr. George Petts. He says: "I saw a statement in your papers that not one farmer in ten knew the cost of grain per bushel, therefore could not tell how much they must sell for in order to make a living profit. I will give you what it costs me to raise wheat. And I think all may figure on the same rule, if they do day's work in a day. It will vary, of course, in proportion to the bushels grown per acre.

In order to come to a plain plan, we must include as much ground in our estimates as can be cut in one day with a reaper, say—

Fifteen acres, valued at \$25 per acre; interest 10 10 cent	\$37.50
Plowing, \$1.50 acre	15.00
Seed, 1½ bushels 10 cent per acre at \$1 per bushel	22.50
Sowing, one day	1.00
Harvesting, three days	5.00
Reaping at 75¢ per acre	11.25
Seeds to bind and shock at \$1.75 per day, board included	12.25
Stacking	4.00
Threshing at 10¢ per bushel—15 bushels per acre	22.50
Cleaning and drawing to market	9.00
Total	\$140.00

Here we have a fraction over 62c. per bushel. These figures cover board, wear and interest on tools. I consider the straw worth as much to feed as would pay to draw the manure back on the land to keep it in good heart. This is the most paying part if well attended to. Now, farmers, you must be your own judges as to how much over 62c. per bushel you must sell wheat, in order to pay debts. It will depend upon the size of the debt, and how much per cent you are paying on it. As I am asked the question almost daily, 'Would you sell your wheat at present prices?' I will give my opinion. I have made up my mind there is not more than two-thirds as much wheat as was thought there would be. Every man hereabouts is disappointed, and we have letters from different points to the same effect. When our grain buyers recover from the bite they got before harvest, and find out how light the crop is, grain will bring a better price. It will not pay us to sell at 50c. per bushel. Better keep it two years and get \$1 than grow two crops at 50c. Those that can hold on until it pays cost and a profit should do so. Wheat is of good quality and worth holding. If growing wheat does not pay, sow less; grow pigs and corn; seed down, or grow flax for the seed."—*Prairie Farmer*.

Winter Barley.

Winter Barley is a variety of grain that has only been tried in this State for a few years, and has not yet got largely into cultivation. Wherever it has been given a fair chance, it has done well, as we know by the crops which we have seen. In a letter to the Branch County Republican, Mr. James Clegg, a well known and prominent farmer, thus writes of Winter Barley:

"The winter barley has been grown in this vicinity for the last three years, and is, consequently, no longer an experiment. With us it has done well in every instance where it has had any chance. The general yield is from 20 to 24 bushels to the acre. Judging from what we have seen of the grain, it is capable of yielding 80 bushels per acre. During the past season it has been raised by the side of spring barley and has produced four bushels to one of the spring variety. Mr. Amos Culver, of this place (Quincy), has raised during the past season 60 bushels per acre on oat stubble once plowed, or 180 bushels on three acres, and on land that has been cropped for eight years in succession.

We think it has decided advantages over spring barley, viz:

1st. It may be sown after farmers get through with their hurry in sowing winter wheat.

2d. It may be harvested before wheat is ripe.

3d. It has no black, or false heads.

4th. It yields two to one, at least.

5th. The insect will not hurt it in the fall and it is so early that the weevil will not hurt it.

We are in hopes this barley will prove a substitute for the wheat crop, if we should be obliged to give up the cultivation of that grain in consequence of the insects and weevil, which at present threaten its destruction in Michigan.

This variety of barley should be sown sometime between the 15th of September and the 1st of November, requiring about two bushels of seed per acre. It will ripen ten days earlier than wheat and leaves the ground in good condition for that grain.

Should any of your farmer readers desire to give this grain a trial, they can obtain seed in this vicinity at one dollar per bushel."

The Fair of the U. S. Agricultural Society.

The following is a list of the premiums awarded to Michigan exhibitors at the fair recently held in Chicago:

To C. H. Williams, of Coldwater, American Devon heifers under one year old, second premium, \$5—"Vic."

To S. M. Seeley, of Coldwater, Morgan and Black Hawk stallions four years old and upward, first premium, \$75—*(Magna Charta)*.

To S. M. Seeley, of Coldwater, trotting stallion under six years old, first premium, \$75—*(Magna Charta)*.

To T. F. Spafford, of Manchester, Spanish Merino bucks two years old and over, first premium, \$30.

To W. Dougherty, of Berrien county, white winter wheat, first premium, \$5.

To Thomas Wallace, of St. Joseph, flour from red wheat, first premium, \$5.

To W. V. Hughes, of Dayton Mills, flour from red wheat, second premium, \$3.

To Thomas Wallace, of St. Joseph, flour from white wheat, second premium, \$3.

To Geo. Shoecraft, of Sturgis, potatoes, first premium, \$5.

To Mrs. E. F. Haskell, of Monroe, preserved fruit, diploma.

To Mrs. P. S. Grimes, of Kalamazoo, best ornamental leather work, \$3.

To Riley & Elliot, of White Pigeon, reaper, second premium, bronze medal.

To Lathrop & McNaughton, of Jackson, best six bay rakes, bronze medal.

To Lathrop & McNaughton, of Jackson, best grain cradles, bronze medal.

To Bean & Wright, of Hudson, best fanning mill, silver medal.

To D. C. Smith, of Tecumseh, best corn-husker, silver medal.

To Bean & Wright, of Hudson, second best hay and straw cutter, bronze medal.

To Waters, Lathrop & Co., of Jackson, best spades, bronze medal.

The Garden & Orchard.

Horticultural Department at the State Fair.

HINTS UPON THE MAKING OF ENTRIES.

This department of the Fair, unlike all others, is subdivided into Amateur and Professional classes; and it, therefore, becomes the first business of the person making an entry of articles, to determine, in his own mind, in which of these classes he is entitled to compete; subject, of course, to the decision of the proper officer.

By a regulation of the Society no article is allowed to compete for more than one premium: it, therefore, becomes necessary that the exhibitor, while at home, gathering his specimens, should decide for which premiums he will compete, select his specimens accordingly, and, having done so, make a list of the desired entries, with the number of varieties intended for each; which list should be handed to the Secretary, as a guide in making the entries. Exhibitors who have had no previous experience in this respect, usually suppose that the Secretary is fully conversant with the matter, and, consequently that this whole matter can be referred to him. This is usually a mistake; as the persons employed to do this business have seldom given the matter a moment's thought before entering upon their duties.

As an illustration of the necessity of circumspection in this matter, we will suppose that an amateur wishes to compete for all the premiums in Division H, Class 3, Apples.—He first makes an entry of a group as "The best and greatest variety of choice Apples," not less than three specimens of each kind.—This group will, probably, include all the varieties he proposes to exhibit, and should be distinctly separated from all others, that the committee may know, precisely, which are to be included. The second entry will be, "The best exhibit of Summer Apples"; and as no specimens from the former group can be included, three additional ones, of each Summer variety, will be required. These remarks are equally true of the Autumn, and Winter groups. We now come to the "Best twelve specimens of any single variety of Summer, of Autumn, and of Winter Apples; each of which requires a separate entry, and a distinct lot of specimens. It should be borne in mind, that these premiums are not offered for the largest apple, nor for the most beautiful; nor, yet, for the richest; but for the one which, taking all its qualities into consideration, is, really, the most valuable in its class. Such relative value can seldom be correctly determined from a cursory examination of the specimens exhibited; hence the necessity for thorough pomological knowledge on the part of judges; who, from the lack of it, sometimes make strange decisions.

The next entries will be for "The best Seedling Summer,—Autumn,—and Winter apples; each of which requires five additional specimens. Premiums should not be awarded in these classes, unless the variety exhibited is, in some important respect, superior to any other known variety of its season; as this is the only proper test of its worthiness, and the rules of the society provide for the withholding of premiums from unworthy objects. As a guard against the re-introduction of old varieties, in these classes, the exhibitor is required to furnish and submit, with such seedlings, a concise history and description, for publication in the Transactions.

The next, and last entry, will be "The best and greatest variety of well grown table apples," which will require the exhibitor to duplicate all the dessert fruits included in his first entry, or, at least so many of them as he wishes to exhibit for premium in this group. Mere culinary or market fruits, should not be included in this lot, as they are to be judged with sole reference to their value for eating, uncooked; and, if the committee understand their business, all coarse, and merely culinary kinds will pass for nothing.

It will be the duty of the Secretary, to furnish the exhibitor a separate card for each group or lot; which must be placed with it, upon the tables; as it is the only means by which the committee are enabled to identify the article or group.

As Floral Hall is essentially the head quarters of the Horticultural Department, all articles belonging to this department, should be delivered there, where persons will always be found in readiness to receive and arrange them.

The importance of attention to the hints given will be understood, when it is stated that, in some instances, within the memory of the writer, some of the finest displays of fruit at our fairs have been passed over, almost, or quite, without premiums; with no fault on the part of the judges, but merely from neglect so to enter them as to bring them properly within the range of the Society's rules. True, committees sometimes amend cases of notorious error or neglect in this respect; but

as this is a step beyond their real power, and is, besides, liable to subject them to suspicion on the part of exhibitors, they usually prefer to throw the responsibility where it belongs;—upon the exhibitor: especially as they are frequently inexperienced in such matters, while the hurry and tumult of the exhibition leave them little time for the consideration of anything beyond their own appropriate business.

T. T. LYON.

Winter Protection for Trees.

BY W. C. STRONG, IN GARDENER'S CHRONICLE.

In the cold latitude of New England this subject is becoming increasingly important. Whether because our forests are cleared, and the open country gives more sweep to the wind, or our winters are colder, or a richer cultivation is in practice, and vegetation is more rank and succulent, or because more artificial and delicate varieties of fruit are in vogue,—whether from one or all of these causes, certain it is, that the proportion of failures from the effects of winter is discouragingly on the increase. A knowledge of the cause is a step towards a cure. Doubtless these causes vary in differing cases; but it would seem reasonable to expect that careful observation would teach us wherein lies our greatest danger. The past winter is specially worthy of note, both from its peculiarity, and the severity of its effects. In this region it is the universal experience that evergreens, vines, fruit trees, passed through a scathing trial. In the early part of December the winter closed in suddenly and with considerable severity, and a cause is found in this fact by many. But in December the sap of trees is most thoroughly absorbed, and consequently the trees are in the best condition to endure cold. Unless an unusually warm November should cause a flow of sap, it would seem as though December and January were the seasons of greatest endurance. Excepting the rather unusual cold term in December, which was yet by no means as cold as many nights in January, the winter of 1858-9 was apparently favorable, and only moderately cold. A careful examination of evergreens on the 1st of March convinced me that they had passed the winter with unusual vigor. I am strongly inclined to think this was also true of all deciduous trees. After a mild March and indications of an early spring, on the 3d of April and for four successive days, raged a fierce, dry, cold north-west wind. The cold was not intense, but sufficient to freeze the ground and prevent plowing, which is not unusual at that season. But the wind was intensely trying, harsh and dry, far worse to endure than the coldest zero weather. Why should it not be as true for plants as of animals? Why should not the wind that dries and chaps and cracks the skin, also cause excessive evaporation of plants, suck out their juices and leave them in all stages of exhaustion? The effects of the April wind were very apparent. Trees that were protected by a hedge, were uninjured to the top of the hedge; but where they ventured above the hedge-line, their tops were cut off as with a knife. The outside north-west ranks of nursery trees stood the brunt and suffered like the front ranks of a phalanx. Wherever trees have had the shelter of other trees, or of a favorable position, they have come out the past spring with great vigor; but in exposed places, even the Rock Maple has been greatly weakened, and many branches killed outright. While it is doubtless true that trees are oftentimes killed by the intensity of cold alone, yet reason and facts seem also to indicate that the harsh, dry winds, that are so trying to animal life, are equally injurious to vegetable life, and are much more commonly the cause of "winter-killing" than simple intense cold.

If this view is correct, it is very satisfactory to the horticulturist; for the cause, on its face, suggests a remedy. Sheltered positions can be found, or shelter can be erected. Hardy evergreens seem to be the most perfectly adapted for this purpose, and I would name the Austrian and Scotch Pines as most perfect of all. Their power of endurance is beyond any other evergreen with which I am acquainted, and their rugged foliage forms an admirable break to the wind. But while simple shelter is ordinarily quite sufficient for most kinds of fruit trees, or at least all that can be practicably given, there are other kinds that will repay for ample protection. I confess to some surprise that so much is made of the extreme hardiness of this or that variety of the grape, for instance. We hear an introducer claim, that though his "variety may not be the 'best,' yet it is remarkably hardy." Not long since, a friend and distinguished cultivator of the grape was pointing out to me the mortality, among some varieties, from the effects of cold. I

asked him why he did not protect them. He replied, that unless a variety could look into the very teeth of a north-wester, and stand the brunt of all weather, it should have immediate leave to retire from the list. Now, I shall express my opinion with the same boldness and say that, by this rule he must disband his whole army, (for he is trying them all.)

The truth is, we have no perfectly hardy table grapes for New England. Doubtless they may break at the proper time, and with tolerable strength in most instances; but at best they are what we call hardy perpetual roses. They are hardy; but every cultivator knows how much more vigorously they break and flower if they have winter protection.—Am I asked if I would protect the Concord or Hartford? Certainly, by all means; lay them down like raspberries. No other labor will yield such proportionate reward. And it seems to be of minor importance that the Rebecca is scarcely able to endure open exposure. Compared with the ample returns in vigor and abundance of fruit, it is so simple and easy to cover vines with earth, as raspberries, that I should suppose the practice would be adopted by all vineyardists. Even the Peach may repay for this treatment in Massachusetts. This year's crop is a total failure. In the spring a premium was offered for a dozen peach blooms from any one orchard; yet I know an instance where branches were covered with earth during winter, and they are now loaded with fruit.

In conclusion, beyond the absolutely "killed," is not the weakening process of winter exposure a more important evil than we are accustomed to regard it? and are not judicious expenditures for shelter and protection of prime importance to the horticulturist?

The Science of Gardening.

Manures sometimes assist plants by destroying predatory vermin and weeds. This is not a property of animal and vegetable manures; they foster both these enemies of our crops. Salt and lime are very efficient destroyers of slugs, snails, grubs, &c. It is astonishing how ignorantly neglectful are the cultivators of the soil, when their crops are devastated by the slug, not to dress them with caustic lime, so as to render the surface of the soil quite white during the promise of a few days dry weather: it is instant destruction to every slug it falls upon; and those that it misses are destroyed by their coming in contact with it when moving in search of food.

It is a common practice to burn Couch-grass, Docks, Gorse, and other vegetables, which are very retentive of life, or slow in decay: a more uneconomical, unscientific method of reducing them to a state beneficial to the land of which they were the refuse, cannot be devised. In breaking up heaths, such exuviae are very abundant; but, in all cases, if the weeds, leaves, &c., were conveyed to a hole or pit, and, with every single horse-load, and with barrow loads in proportion, a bushel of salt and half a bushel of lime were incorporated, it would, in a few months, form a mass of decayed compost of the most fertilizing quality; the lime retaining many of the gasses evolved during the putrefaction of the vegetable matter, and the salt combining with the lime to destroy noxious animals, which might form a nidus in the mass. By this plan nearly all the carbonaceous matters of the refuse vegetable are retained; by burning, nearly all of them are dissipated. The forming of a compost, such as that recommended, is justified and approved by the experience of many.

Stable-manure, and all decomposing animal and vegetable substances, have a tendency to promote the decay of stubborn organic remains in the soil, on the principle that putrescent substances hasten the process of putrefaction in other organic bodies with which they come in contact. Salt, in a small proportion, has been demonstrated by Sir I. Pringle to be gifted with a similar septic property; and that lime rapidly breaks down the texture of organized matters is well known.

There is no doubt that rich soils, or those abounding in animal and vegetable remains, are less liable to change in temperature with that of the incumbent atmosphere than those of a poorer constitution. This partly arises from causes already explained when treating of the influence of the color of soils upon vegetation. Such manures, as salt, protect plants from suffering by sudden reductions of temperature by entering into their system, stimulating and rendering them more vigorous, impregnating their sap, and consequently rendering it less liable to be congealed.

Other saline manures are beneficial to plants from similar causes; but, as is justly

observed by Professor Johnston, "we have also seen that all our cultivated crops require the ingredients of several saline compounds to form a healthy plant. Hence we naturally draw the inference, that artificial mixtures of two or more saline substances are likely to be still more useful, and more generally so, than any one substance applied alone.

Every cultivator of the soil, by certain empirical signs, may be able to determine that certain appliances are required to render his land productive. For example, he knows when chalk may be applied to advantage; but no lengthened practice has yet enabled any one to judge of the quality of a chalk by its exterior appearance. Chemistry alone can do this. The farmers of a district in Yorkshire having experienced the benefit of lime, procured some from a neighboring kiln, and were astonished to behold the injury it caused to their crops; and it remained an anomaly of their experience, until chemistry demonstrated that the lime near home contained a very large proportion of magnesia, which, absorbing carbonic acid very slowly, remained in a caustic state, to the injury of the roots of the plants, and the diminution of benefit from the carbonic acid evolved by the decomposing constituents of the soil.

The experiments of Saussure demonstrate the benefit accruing to cultivated plants from animal and vegetable manures decomposing in the soil; but they do more, for they afford additional evidence to that already given how erroneously those persons argue who recommend the seed to be soaked in powerfully stimulating manures, for no other reason than because they are grateful to the adult plant. Carbonic acid gas, though an efficient promoter of a plant's growth when mature, is a check to its progress whilst the root is forming. Saussure placed peas so that their just developed radicles were immersed, some in distilled water, and others in water impregnated with carbonic acid. The radicles when the experiments commenced were two lines and a half in length, and in ten days those in distilled water were five inches longer than those in the acidulated water, and the stalks and leaves were equally superior. But when a month had passed, the relative superiority was reversed, and in six weeks the plants fed with carbonic acid were in every respect most vigorous. Ruckert obtained nearly the same result when beans were grown in earth, some being watered with distilled water, and the others with water impregnated with carbonic acid.

Every cultivator in districts where marl is to be obtained is aware that it is highly beneficial when applied to the land; few of them, however, know that this various-colored compound of earths contains always chalk, often to the amount of 50 per cent. They learn from experience that the marl of one district is most beneficial to the heavy soils; that of a second district is productive of most benefit upon light land: yet they are ignorant, in the first instance, that the first marl contains silica, or sand; that the second has alumina, or clay, as a component; and if a new pit is opened, they have to wait the result of some year's practice before they can ascertain its quality. The chemist can inform them in an hour.—J. in *Cottage Gardener*.

Something New in Mulching.

Mr. Bright, of the Logan Nursery, Philadelphia, has been experimenting on the cheapest method of mulching the ground on which he grows the small fruits, and he has found that by using the Southern Field, or Cow Pea, he can grow enough vegetable matter to mulch his ground very thoroughly. He says in the *Farmer and Gardener*:

"I have for some years been studying how to perform this very desirable process of mulching in a cheap and efficient manner, and I think I have accomplished it very satisfactorily, by growing the mulching material on the ground required to be mulched.

The plant employed for the purpose is the southern Field Pea, or Cow Pea, a very strong growing leguminous plant, which will succeed on almost any soil, without manure, and in sixty to ninety days will produce as much vegetable matter on an acre, as can be found in a clover sod two years old. This is the plant now so much employed as a renovator of sand and barren soils in Virginia and other Southern States. A crop of Cow Pea

Vine, turned under when green, is the best possible preparation, on exhausted soils, for wheat and corn. This pea I sow in the rows between grapes, raspberries and other small fruits, either broadcast, or (a preferable mode) in a wide drill, about as thick as you would for an ordinary crop of early peas. It starts in a few days, grows rapidly, keeps down the weeds, shades the ground perfectly, while growing, and furnishes an ample mulching

when cut down, while in blossom, thus producing at a cost of three dollars for seed, and a little labor, a substitute for sixty dollars worth of litter, which would be required to accomplish the object by mulching in the ordinary way.

The pea, it is well known, obtains its chief supply of nutrition from the atmosphere, and draws very lightly upon the ammonia in the soil; or rather it will grow vigorously in a sandy, barren soil, almost destitute of carbon and ammonia, the two most valuable constituents of rich soil. The pea, however, demands lime, or potash, which it no doubt finds in sand, but it is greatly improved, (and so are all small fruits) by a supply of lime added to the soil.

By this method of mulching, I save buying or using of valuable litter. I shade the soil perfectly all summer, and I bring up from the sub-soil, and extract from the atmosphere, by means of my peas, enough vegetable matter, (carbon,) ammonia (nitrogen,) and earthy salts (potash, soda and lime,) to furnish a large part of the foliage, wood and fruit, of my next crop of fruit; thus making the peas perform the part, not only of a mulching substance, but a provider of food for my fruits.

If the reader will look at any analysis of the pea vine, he will find it richer in nitrogen, or ammonia, than any other straw; and yet it is well known fact, that the pea, and especially the Cow or Field Pea of the south, will grow in a poorer soil than any other plant, except weeds, moss, or something of that sort. In this view of the pea, it becomes a constant renovator of the fruit garden, as well as a mulching substance, and as such I invite the attention of gardeners to its great and peculiar merits.

Wine Making.

FROM THE CALIFORNIA CULTURIST.

White Wine.—During the crushing of the grapes and falling of the same in the press, some juice will run off without pressing; this juice will make the first quality of white wine, and is generally barreled by itself. When the press becomes full, and is pressed slightly, the juice thus gained will make the second quality. Now the balance remaining can be used to distill brandy from, or make an inferior quality of red wine. For the latter purpose, put the whole mass, with stems and all, into a large fermenting tub, and when nearly full, fill the balance with pure water and let it ferment.

The first and second run of the juice, as stated, is put in separate barrels, which are filled within six inches from the top, the bung-hole covered with vine leaves or a cloth, and left for fermentation.

Red Wine.—If persons wish to make the first quality of red wine, the process is as follows:

Take the whole crushed mass together, with its juice, and put it in the fermenting tub; cover said tub with a clean cloth; let it ferment in warm weather six days; if cool, twelve or fourteen days, and take every day a crutch-like stick and press the stems, which will come to the top of your tub, down into the fluid mass; when, after the above given time, you put your ear to the tub and hear no fermentation, the wine is ready to be drawn; but to be perfectly sure, take a gimblet and bore a hole in the tub about from six to ten inches from the bottom, and if the wine comes out clear you can draw it off into the barrels; but in your fermenting tub you must have, previous to putting in the mass, nailed a grate or kind of sieve over the faucet hole, to prevent the grape seeds from coming into the faucet hole. Now your red wine barrels have to receive the same care, as stated above of your white wine, in your cellar, with the exception that the red wine barrels must be filled full, as there is no danger of a strong fermentation as of the white wine. Of course every person will understand that to make red wine you must have blue grapes; but white wine can be made as well from blue as white grapes.

Second Quality of Red Wine.—It was stated above that the white wine from the blue grapes was pressed, and then the mass of stems and husks was put into a fermenting tub filled with water and left for fermentation, the fluid drawn off thus would give only a poor wine; but if said fluid is pressed over stems and husks in a second tub, and left over them for twenty four hours, then drawn off and poured over stems and husks in a third tub, and this way continue up to five or six tubs—the fluid drawn off from the last tub will make an excellent wine the next July or August.

When the fluid from tub number one is drawn off to pour it over the stem and husk mash in tub number two, one must be filled with warm water, which is left twenty-four hours on it, and then the same process is applied as above described—said fluid passing through all the tubs; and this is to be continued by pouring slowly warm water over the mass in said tubs until every particle of spirituous matter is extracted from them—this so extracted fluid is then used to distill brandy from.

FOREIGN AGRICULTURE.

Scientific Lecture on the Feeding of Stock.

One of the important elements of the Highland Society's show was the lecture given by the Society's chemist, Dr. Anderson, on the "Feeding of Stock as a branch of Farm Management." The lecture was well attended, and altogether created considerable attention. After some preliminary observations, Dr. Anderson remarked—

"All branches of Agriculture are now going through this phase of existence, and principles are being gradually established. The feeding of stock is exactly one of those subjects which can be most successfully advanced by studying the principles on which it depends; and though these involve many most complex chemical and physiological questions, we have obtained some foundation on which to go. The food which an animal consumes is partly assimilated and partly excreted, but, if it be proportioned to its requirements, its weight remains constant, and hence we learn that food does not remain permanently in the body. If, now, an animal be deprived of food, it loses weight, owing to the substances stored up in the body being used to maintain the process of respiration and the waste of the tissues. The course of events within the body is, so far as known, somewhat of this kind. The food is digested, absorbed into the blood, a certain quantity being consumed to support respiration. If the food is properly adjusted to the requirements of the animal, its weight remains unchanged—the quantity absorbed and that excreted exactly correspond to one another; but, if we increase the food, a part of the excess will be deposited in the tissues to add to its weight. Now, the quantity absorbed depends upon the state of the animal—a lean beast thoroughly exhausting its food, while, when it is nearly fat, it takes only a small proportion. So, likewise, if the quantity of food be greater than the digestive organs can well dispose of, a certain quantity escapes digestion altogether, and is practically lost. The problem which the feeder has to solve is, how to supply his cattle with such food, and in such proportions, as to ensure the largest increase with the smallest loss. In solving this problem we must, in the first place, consider the general nature of the food of all animals, the constituents of which may be divided into three great classes—the nitrogenous matters, which go to the formation of flesh; the saccharine and oily, which support respiration and form fat. It is sufficiently obvious that these two great functions of nutrition and respiration must proceed simultaneously, the most advantageous food will be that which supplies them in the most readily assimilable forms, and in proper proportions. In regard to the first of these matters, it will be obvious that if two foods contain the same quantity of nutritive matters, but in one they are associated with a larger quantity of woody fibre or other non-nutritive matter, the latter will have considerably less value than the former. The necessity for a proper balance of the two great classes of nutritive constituents is also sufficiently obvious, for if, for example, an animal be supplied with a large quantity of nitrogenous matters, and a small amount of respiratory elements, it must, to supply a sufficiency of the latter, consume a much larger quantity of the former than it can assimilate, and there is practically a great loss. We may determine the proper proportion of these substances in three different ways—1st, we may determine the composition of the animal body; 2d, we may examine that of the milk, the typical food of the young animal; and 3d, the results of actual feeding experiments may be examined. But, however valuable the data derived from these experiments may be, they are less important than those derived from actual feeding experiments. In fact, it by no means follows that the proportions in which the substances are found in the animal are exactly those in which they ought to exist in the food. On the contrary, it appears that while one-tenth of the saccharine and fatty matters are assimilated by the animals, only one-twentieth of the nitrogenous compounds, and one-thirtieth of the mineral substances in the food, are assimilated by the animal. On the other hand, however, it must be remembered that the particular compounds also exert a very different influence. Thus a pound of fat in the food, when assimilated, will produce a pound of fat in the animal; but it requires about two and a half pounds of sugar and starch to produce the same effect. The broad general principle arrived at is, that we must afford a sufficient supply of readily assimilated food, containing a proper proportion of each class of nutritive substances. But there are other

matters also to be borne in mind, for the food must not only increase the weight of the animal, but also support respiration and animal heat; and the quantity of food required for this purpose is large. It appears, from Bousingault's experiments, that in a cow eighteen ounces of nitrogenous matter are required to counterbalance the waste of the tissues—a quantity contained in about ten or twelve pounds of wheat flour; and it is well known that an ox expels four or five pounds of carbon daily, to supply which one hundred pounds of turnips are required. We see from this the large quantity relatively to that used up which is required for the maintenance of these functions, and the importance of adopting such measures as, by restraining them within the narrowest possible limits, produce a saving of food. The diminution of muscular exertion, and keeping the animals warm, so that a small quantity of food may be required to act as fuel to maintain the animal heat, are the most important considerations. Although the presence of a sufficient quantity of nutritive matters is an essential qualification of all foods, their mechanical condition is not unimportant, for unless its bulk be such as to admit of the stomach acting upon it properly there must be an appreciable loss; and there is no greater fallacy than to suppose that the best results are to be obtained by the use of those which contain their nutritive matters in a small bulk. As a practical question, the principles of feeding are restricted to determining how the staple food produced on the farm can be most advantageously used to feed the cattle kept on it, and on this point much requires to be said. It appears that they can be best made use of when combined with more highly nutritious food, such as oil-cake or rape; and, when this is properly done, a very great advantage is derived. It appears from experiments that sheep, which, when fed on hay only, attain a weight of ninety pounds, reach a hundred when rape is added. The subject cannot be completed without referring to the value of the dung produced, which has been variously estimated."

The experiments referred to in the course of the address appeared to show that, of food generally, about one-third to one-fourth of the money value, and seven-eighths of the valuable matter, appear in the dung. Dr. Anderson concluded by saying that he had by no means attempted to exhaust, but had given only a sketch, trusting that the observations of others might fill up the details.

Investigation of the Sugar-Bearing Capacity of the Chinese Sugar Cane.

BY PROF. J. LAWRENCE SMITH, IN U. S. PATENT OFFICE REPORT.

On investigating the sugar-bearing capacity of the Chinese sugar cane, the first step required was juice extracted from the plant. From various conflicting statements on the subject, nothing satisfactory could be gleaned, some of the best authorities insisting that there was no crystallizable sugar in the juice, or but a very small portion, while others, equally as strong, held the contrary opinion.

There are two kinds of sugar of common occurrence, namely, glucose, or grape sugar (a sugar moderately sweet and difficult of crystallization,) and cane sugar, with a very sweet taste and easily crystallized. The first form of sugar occurs most abundantly in fruits—the latter in the sugar-cane, the beet-root, maple, melon, &c. I would remark in addition, that cane sugar is easily convertible into grape sugar, and, in all processes for extracting the former, one important aim is to prevent this transformation. For instance, were we to take the juice of the sugar cane (containing about 25 per cent. of the crystallizable sugar,) and concentrate it without subjecting it to the action of lime or some other defecating agent, fully half of the sugar would be rendered uncrystallizable, and there would be only a small yield of sugar, but a large amount of molasses. For this reason, in regarding the sugar-bearing capacity of any vegetable, the two facts to be considered are, first, the quantity of cane sugar it contains, and, secondly, the amount and character of the impurities associated with the sugar; for the latter, during the concentration of the juice may give rise to the alteration already mentioned, or they may prevent the sugar from crystallizing without altering it.

The juices of the sugar cane, beet root, and maple present about the best conditions of any of the vegetable juices for furnishing sugar, and, according to the care and skill exercised in the working of them, so is the yield of sugar.

Without further preliminaries, I will proceed to state the result of the investigation of the Sorgho sucre, as far as possible to make it the present time. Owing to the season being far advanced when the experiment was

commenced, it was impossible to undertake anything more than a chemical examination of the juice, as the frost had already affected most of the cane which was not cut. Here I would remark that it is of the utmost importance to examine plants perfectly fresh and unaltered, if we expect correct results in relation to the crystallizable sugar they will produce; and it is a well known fact that even the broken and bruised canes of a field will deteriorate the juices, if passed through the mill with the perfect canes. Even on the surface which is cut, an alteration commences, at once the sugar is changed, and this alteration gradually creeps from the cut extremity into all joints of the stalk. I have verified this fact in relation to the sorgho. By examining different joints, after it had been cut two or three weeks, the results were as follows, the joints being numbered from the extremity to the roots:

Joint	Crystallizable sugar.	Uncrystallizable sugar.
1st joint contained.....	6 per cent.	7 per cent.
2d joint contained.....	8 per cent.	4½ per cent.
3d joint contained.....	9½ per cent.	4 per cent.

Hence it is evident that no time is to be lost, after cutting, in expressing the juice.

Not being able to supply myself with the fresh cane as needed for examination, the structure of the plant, with reference to its sugar-bearing cells, was not investigated.—My inquiries, therefore, were directed to the more important study of the composition of the juice.

Some of the sorgho, perfectly matured and recently cut, was compressed, and the juice submitted immediately to analysis. The process adopted for ascertaining the quality and character of sugar is the only one that can be relied on for anything like accurate results. It is known as the process by polarized light, in which the juice to be examined is first made in a few moments as transparent and colorless as water, and that without the agency of heat. The juice as compressed is of a light green color, opaque, and largely mixed with cellulose tissue from the plant. It is readily clarified by acetate of lead, and when thus submitted to examination by Soliel's polarizing saccharometer, three specimens give the following results:

No. of Specimens.	Crystallizable sugar.	Non-Crystallizable sugar.
1st.....	10 per cent.	1½ per cent.
2d.....	9½ per cent.	2 per cent.
3d.....	10 per cent.	2 per cent.

This result settles the question that the great bulk of the sugar contained in the sorgho is crystallizable or cane sugar proper.

The difference of opinion which has existed on this subject doubtless arose from the fact that different degrees of care had been taken in the concentration of the juice, or that a more or less perfect process of defecation was resorted to, sometimes rendering the juice altogether uncrystallizable, while at others it furnished a reasonable quantity of sugar.

The results obtained in the analysis of liquids containing sugar by polarized light are especially valuable, as the impurities which may be associated with the sugar in no way affect the accuracy of the analysis, the only requisite being to render it perfectly transparent. Besides the sugar and water contained in the sorgho, the following constituents are found: Cellulose, woody fibre, pectine, pectic acid, albuminous matter, phosphates, sulphates, oxalates, potash, soda and lime salts, starch, and aromatic matter (probably a volatile oil.) Owing to the complex nature of the juice, and the difficulty of its examination, some of the constituents (existing in small quantities) may have been overlooked, but the prominent ones are those recorded in the above list.

Further examination made upon pieces of the stalk showed it to be constituted as follows:

Per cent.	
Water.....	75.6
Sugar.....	12.0
Woody fibre, salts, &c.....	12.4
	100.0

So were it possible to compress all the juice from the cane, there would be a yield of 87.6 per cent. In some operations, by compression, I have obtained a yield of 66 per cent., but I do not think that the ordinary method of passing the cane between rollers furnishes over 50 per cent. of juice.

The following table gives, at a glance, the composition of the sorgho sucre, the sugar-cane, and the beet-root:

	Sorgho.	Sugar cane.	Beet root.
Water.....	75.6	72.1	88.5
Sugar.....	12.0	13.0	10.5
Woody fibre and salts, &c.....	12.4	9.9	6.0
	100.0	100.0	100.0

Satisfied as to the composition of the sorgho juice, the next step was to examine into some process of separating the sugar. The first method tried was the one transmitted from the patent office, and proposed by Leonard Wray. It consisted in treating the cold juice with lime, filtering, then treating with a

solution of nut-galls, filtering, again treating with lime, filtering and evaporating to proper consistency, and allowing it to crystallize.—This method did not succeed in my hands, the juice becoming very much blackened.—All subsequent experiments were made with those methods already successfully practiced on the juices of the sugar cane and beet-root.

The first of these methods is to take the fresh juice, heat quickly to 130 degrees F., add sufficient lime to enable the solution to act on reddened litmus paper, filter, evaporate about a third of the liquid, filter through well-washed animal charcoal; evaporate at a temperature not exceeding 220 degrees, and when sufficiently concentrated, set aside to crystallize.

A second method, which I prefer to the one last mentioned, is to warm the fresh juice rapidly to 120 degrees; then add to each gallon of juice 3 ounces of lime, first slaking it with five or six times its weight of water, then bringing the temperature up to 200 degrees. It is then filtered and carbonic acid passed through the juice, afterwards filtered and evaporated to proper consistency for crystallization. Each time that the juice is filtered, if it be allowed to pass through well-washed animal charcoal, the syrup may be made very clear, and the sugar prepared from it will be perfectly white. During the evaporation the temperature should at no time exceed 215 degrees.

It often happens that we have to wait days and even weeks for the crystallization to take place; but it may always be hastened by adding to the thick syrup, when cool, a few grains of brown sugar, or a little pulverized white sugar.

I do not profess to give the methods described as those best adapted to the extraction of sugar from the sorgho, but there are others not yet experimented with, which may succeed better. Although much of the sorgho syrup which I have tasted is far from being agreeable, yet, when properly prepared, it can not be readily distinguished from that of the sugar-cane of the tropics.

It must not be forgotten that sugar making is an art that cannot be practiced by every one with a mill and set of kettles; and, moreover, that the sugar making at present is a vast improvement on that of former days, and where these improvements are not employed, the process is carried on to a disadvantage. Also, in extracting sugar from one vegetable, we are not to expect to apply successfully those methods practiced on other vegetables. It was not by applying to the beet root the method of extracting sugar from the cane that France is now able to produce 100,000,000 pounds of sugar from that root, a quantity equal to one-half of what is consumed by her entire population of 30,000,000. Beside, it was not in a year or two that the beautiful and economical processes now employed were brought to their present degree of perfection.

What was necessary for the beet root is doubtless required for the sorgho, namely, thorough study of its nature with a process of extracting the sugar specially adapted to it.

In regard to the economical results to arise from the cultivation of the Chinese sugar cane, I have no data upon which to form a correct opinion, as it would require an entire season, at least, to go over the subject, and to examine the plant in its different stages; also to examine its fixed principles, and ascertain its exhausting effects on the soil. As already stated, the cane examined was in a perfectly mature state, but I have been informed that in the earlier stages there is more sugar in the plant. If this be true, an investigation should be made of its sugar bearing qualities in the different periods of its growth.

The economical value of this plant in regard to its sugar or syrup, is far from being settled, even should the syrup be readily converted into sugar. It grows in a temperate climate, it is true, but so does the beet root which, under skillful cultivation and a well directed manufacturing process, will yield from 1,300 to 2,000 pounds of sugar to an acre.

The following are the most important facts established by the present inquiry:

1. The sorgho contains about 10 per cent. of crystallizable sugar.

2. The sugar can be obtained by processes analogous to those employed for extracting sugar from other plants.

3. The uncrystallizable sugar forms rapidly after the cane is fully ripe and recently cut.

The present investigation I regard only as a preliminary to the proper study of the plant in question. Some of the points yet remaining for investigation are:

First, the composition of its ash, compared with that of the sugar cane, in order to learn its requirements of soil, when compared with those of the latter.

Secondly, the analyses of the plant in cer-

tain stages of its growth, and from different localities, to learn when it contains the largest amount of sugar, and what latiude is most favorable to its development.

Accompanying this report are specimens of syrup and sugar; the former transparent and of a light wine color, the sugar perfectly white and fine flavored.

Action of Medicines on Cattle.

BY G. W. BOWLER, V. S., IN THE FARMER AND GARDENER.

The therapeutic action of the many agents in treating the numerous diseases to which domestic animals are subject, has, in a great measure, different effect on the horse from that it exercises on the ox; which may be accounted for in several ways. In the first place, the construction of the stomach and intestines of the ox differs considerably from those of the horse; the latter having only one stomach, and that extremely small in comparison with the rumen or paunch of the cow. The intestine tube of the horse likewise is much shorter than that of the ox.

In ruminating animals, the stomach is a very complex organ, being divided into four compartments; one portion of which, termed the paunch, is of such vast dimensions as to occupy, when distended with food, about three-fourths of the abdominal cavity, and situated behind the liver. There is another smaller one known as the reticulum, or second stomach. In connection with this is the manyplus, or third stomach. It is a very curiously constructed organ, being formed of a considerable number of leaves. There is also another termed the abomasum or fourth stomach. When food is first swallowed, it rolls into the rumen or paunch, there joining the mass of other food. The second stomach of the cow always contains food, and as a general thing, the rumen contains a large amount of food also. This is, I may say, one particular reason why the same amount and kind of medicines do not have the same action as they do in the horse. As there is almost constantly a large amount of undigested food in the stomach, the medicines administered necessarily become mixed up with the food, thereby taking a considerably longer time before they become absorbed. The stomach also is used to receiving so many different varieties of vegetable matter, that medicinal agents belonging to the vegetable kingdom do not appear to have the same effect they do on horses. For instance, if we give five drachms of Barbadoes aloes to a horse, it is most likely that it will, in the course of twenty-four hours, purge him freely; but in the ox it does not have the same effect, being neither prompt nor powerful, for if we give it in doses of several ounces, and reduce it to a fluid state, we cannot produce the copious evacuations we can in the horse.

The sulphate of magnesia proves to be one of the best and most convenient purgatives we can use for cattle, as, when given in full doses, it produces fluid evacuations in the course of about twelve hours, at the same time it appears to be very beneficial, from the action it has on the kidneys and skin, by considerably augmenting the secretions. It may be given to the ox in most diseases with which he may be affected, as we can rarely do injury by giving purgative medicines to ruminants. The sulphate of magnesia is a very valuable antidote in cases of poisoning by lead, and which frequently occurs in the neighborhood of lead mines. When it is given in cases of this description, it produces an insoluble sulphate, at the same time acting on the bowels, which, in cases of lead poisoning, are invariably constipated. In small doses, frequently repeated, it also acts as a diuretic, and if you wish to increase its action as a purgative for cattle or sheep, about a dozen croton beans may be added, combined with two or three drachms of ginger. The dose of the sulphate of magnesia, as a cathartic for adult cattle, is from one to two pounds; calves, three or four months old, from three to four ounces, and sheep four to six ounces, which should be dissolved in about five parts of water, and to make it more palatable, a small quantity of molasses may be combined with the mixture.

Another very valuable agent as a purgative for cattle, is found in chloride of sodium. It is, in fact, of the two, more powerful than the sulphate of magnesia, as it produces a considerable thirst for water; on being freely taken into the stomach it has a tendency to soften the feculent matter which may have accumulated in the hardened mass, and which would very probably resist the action of other cathartics. It is, also, when given in small doses, frequently repeated, a valuable stomachic. All animals are fond of salt, and it appears to be a necessary agent in maintaining good health among them. The dose as a cathartic for adult oxen, is from three-fourths to one pound, and from one to three ounces for sheep, which should be dissolved in a large quantity of water, compounded with molasses and ginger.

1859. ELEVENTH FAIR. 1859.

ANNUAL EXHIBITION

OF THE

Michigan State Agricultural Society.

Open to Competition from all States.

The list of premiums offered by the Society is the largest and most extensive that has ever been offered in Michigan.

Premium lists may be had on application to the Secretary.

Exhibitors will be required to purchase an exhibitor's ticket before making entries of stock of any kind. An exhibitor's ticket is not transferable, and will permit entrance and exit to the party only who has made the entry, and to no other person.

Exhibitors of stock, who enter more than one animal will be required to pay fifty cents additional, as an entrance fee for such other stock.

Entries may be made at any time previous to the Fair at the office of the MICHIGAN FARMER, 180 Jefferson Avenue, Detroit.

The Buildings and Fixtures.

The Floral Hall will remain of the same size it was last year, being one hundred feet long and fifty feet wide, and its decoration will be placed in the hands of E. St. Alary, Esq., whose tasteful designs gave such universal satisfaction at the Fair of 1858. It will be mainly devoted to the display of Fruits, Flowers, Musical Instruments, and Articles of Ornament.

The Hall of Art is to be a new building, octagon in shape, with windows in the roof. Here will be displayed the collections of paintings, engravings, statuary and other works of art. This building will be shingled, and weather tight.

The Hall of Mechanics will be extended in length and width, so as to afford ample protection to all carriages and mechanical designs, and will be supplied with steam power.

The Hall of Agriculture will remain of the size it was in 1858, being one hundred feet long and thirty feet wide, and will as then be devoted to the display of seeds, vegetables, household products, bread, butter, honey, sugar, &c.

The Hall of Manufactures will be extended and made fifty feet wide, with a good shingled roof that will protect all goods from the changes of the weather.

The Poultry House will be large and extensive enough to accommodate all exhibitors.

The pens for the sheep and swine will extend along the west fence of the grounds.

The Stables for the horses will extend along the west side of the track on the inside for about eight hundred feet, in a double row, each stall to be five feet wide and ten feet deep, and provided with feeding box and manger.

9. The Cattle Sheds will extend along the north end of the ground, and to be 1800 feet in length in two or three separate ranges.

10. The Amphitheatre will be remodeled and improved, and rendered as attractive by the display of cattle and horses as it was last year.

11. Cattle rings will be erected for the display and examination of cattle during the fair.

12. A grand stand, capable of containing two thousand persons will be erected in front of the judge's stand, on the north side of the track, that ladies may have full opportunity to witness the display of horses.

GENERAL PROGRAMME.

Tuesday--First Day--Entries.

The Fair Grounds will be thrown open for members and visitors at 8 o'clock, A. M. Entries will be made at the Secretary's Office on the grounds during the day.

All persons who have been appointed members of the Viewing Committees are requested to report themselves at the Secretary's Office on the grounds, where they will receive their tickets, and their names will be registered.

The Gates will close at 7 o'clock P. M. of each day.

Wednesday--The Examination of Cattle.

The books of the several classes will be delivered to the chairmen of the several Committees, who will report themselves at the President's Stand between the hours of eight and nine, when the books are delivered, the committees will immediately commence their duties; except in cases where there are special directions.

The examination of cattle will commence at eight o'clock in the Amphitheatre, and the judges on Shorthorns will be expected to be ready at that time. Exhibitors of Blood Cattle are requested to have them in readiness as called for by the Marshalls. The examination of cattle will proceed throughout the day, both in the Amphitheatre and the cattle rings. Special daily Programmes will designate the order of arrangement, and what classes shall be examined in the cattle rings and in the amphitheatre.

No trotting or driving on the track will be permitted on this day before three o'clock, P. M.

At three o'clock, P. M., the Committee on Trotting stock will call up in their order the three year olds and all stock under that age, and should these classes be passed upon, then the Black Hawk and Morgan classes of three years old and all under that age.

Thursday--Horses.

The Viewing Committees will proceed with their duties, commencing at eight o'clock.

The Committee on Horses for All Work will occupy the Amphitheatre at eight o'clock.

The Committee on Trotting Stock, will occupy the track and position at the grand stand, and when it has passed upon this class, the Committee on Black Hawks and Morgans will occupy the same position. All cattle that have not been examined on Wednesday, will be examined in the cattle rings on this day.

Examinations will proceed till two o'clock, P. M.

At three o'clock, the Annual Address will be delivered before the Society by His Excellency Governor N. P. BANKS, of Massachusetts. On the close of the address, the examination by the Viewing Committees will be resumed. The Committees will hand in their reports as soon as possible after closing their examinations.

Friday--Last Day--Awards.

All stock that have not been examined on the previous days of the Fair will be viewed and passed upon during the morning of this day.

The awards of premiums will be announced.

The election of officers for the ensuing year will take place.

The stock will be removed. And all stock that may be brought for sale will be offered at auction, an auctioneer being on the ground for the purpose.

Membership tickets \$1.00. Each membership ticket will be delivered accompanied by four single entry tickets. A membership ticket is not an admission ticket.

Tickets of admission will be sold at the Treasurer's Office beside the gates, at 25 cents each.

Carriages admitted as follows: Each single horse carriage 25 cents; each double carriage and driver 50 cents; each person in any carriage must have single tickets.

C. DICKEY, President.
Office of the Michigan State Agricultural Society,
Detroit, August 1, 1859.

NEW ADVERTISEMENTS.

F. A. BRUGUERRE, New York, Andre Leroy's Nurseries.
F. E. WALBRIDGE, Kalamazoo, Durham Stock for sale.
J. DOUGALL, Windsor, C. W. Windsor Nurseries.
RICHARD PETERS, Atlanta, Cashmere Goats.

STATE FAIRS FOR 1859.

Indiana, New Albany, Sept. 26-30.

Iowa, Oskaloosa, Sept. 27-30.

Canada West, Kingston, Sept. 27-30.

Connecticut, New Haven, Oct. 11-14.

Michigan, Detroit, Oct. 4-7.

New York, Albany, Oct. 4-7.

New Jersey, Elizabeth, Sept. 20-23.

Wisconsin, Milwaukee, Sept. 28-30.

Missouri, St. Louis, Sept. 26, Oct. 1.

New Hampshire, Dover, Oct. 5-7.

Tennessee, Nashville, Oct. 5-7.

Georgia, Atlanta, Oct. 24-28.

Maryland, Frederick City, Oct. 25-28.

Alabama, Montgomery, Nov. 15-18.

COUNTY FAIRS FOR 1859.

Macomb, Utica, Oct. 10-12, John Wright, Sec'y.

Lenawee, Adrian, Oct. 5, 6, A. Howell, Sec'y.

Barry, Hastings, Sept. 29, 30, D. Striker, Sec'y.

Oakland, Pontiac, Oct. 12-14, M. W. Kelsey, Sec'y.

St. Joseph, Centreville, Sept. 28-30, D. Oakes, Sec'y.

Allegan, Allegan, Sept. 28, 29, H. S. Higginbotham, Sec'y.

Jackson, Jackson, Sept. 28-30, D. Upton, Sec'y.

Kent, Grand Rapids, Sept. 28-30, L. H. Scranan, Sec'y.

Berrien, Niles, Sept. 27-29, E. W. Landon, Sec'y.

Hillsdale, Hillsdale, Oct. 12, 18, F. M. Holloway, Sec'y.

Lapeer, Lapeer, Oct. 18-20, H. Loomis, Sec'y.

Ionia, Ionia, Sept. 29, 30, H. F. Baker, Sec'y.

Van Buren, Paw Paw, Sept. 29, Oct. 1, O. H. P. Sheldon.

Sanilac, Lexington, Sept. 27, 28, C. Waterbury, Sec'y.

Washtenaw and Wayne Union, Ypsilanti, Sept. 28-30.

Shiawassee, Corunna, Sept. 29, 30, P. S. Lyman, Sec'y.

Huron, Kalamazoo, Oct. 11-14, G. F. Kidder, Sec'y.

Eaton, Charlotte, Sept. 26-28.

Calhoun, Marshall, Sept. 29, Oct. 1, S. Lewis, Sec'y.

Ingham, Mason, Oct. 6, 7, G. M. Huntington, Sec'y.

Washtenaw, Ann Arbor, Oct. 11-13.

Monroe, Monroe, Sept. 27-29.

MICHIGAN FARMER.

R. F. JOHNSTONE, EDITOR.

SATURDAY, OCTOBER 1, 1859.

Stock for the State Fair.

We have had the pleasure of examining some very fine Shorthorn stock, that has been brought up from Livingston county, N. Y., by Mr. Barber, of Avon, for exhibition and sale at the State Fair. The stock consists of one bull, three cows, and ten heifers, all the descendants of imported stock, with two exceptions from stock imported by the Livingston County Association. The bull brought up is a five year old named *Bletsco Second*, and was sired by the imported *Bletsco*, and is from a dam likewise imported, named, *Falacy*. He is a bright red, with some white, and exhibits a fine strong, active habit, and sound constitution. Several of the cows are of the *Bletsco* stock, and trace back to the old *Splender* and *Defiance* blood, families famous for quality, size, and fattening qualities.

We notice, also, as here present, a magnificent chestnut Suffolk stallion, that weighs over nineteen hundred pounds. For draught this animal must be hard to beat. He is well proportioned for so large an animal, exhibits tremendous power. He is the first of the pure breed we have yet seen offered for exhibition in this State. He is here to show against a Clydesdale horse which took the first premium at Chicago. This horse has taken six first premiums at exhibitions where he has been shown.

Up to the moment of our going to press, there have already been made a large number of entries of all kinds. Amongst them we may note J. H. Button, of Farmington, amongst whose entries, are five yoke of oxen to compete for the premium offered for the best five yoke to be shown by any county in the United States or Canada.

We must also call attention to the sale of stock belonging to the late H. R. Andrews, of Detroit, which will take place on the fair grounds on the last day of the fair. This stock is thoroughbred. The leading horse is *Buford*, a son of *Glencoe*, and a remarkably good horse, for stock. The mares are well selected for breeders, and will be worth the attention of those who desire to have a strain of high breeding infused into their horses.

Examinations will proceed till two o'clock, P. M.

At three o'clock, P. M., the Committee on Trotting Stock will call up in their order the three year olds and all stock under that age, and should these classes be passed upon, then the Black Hawk and Morgan classes of three years old and all under that age.

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C. DICKEY, President.

Office of the Michigan State Agricultural Society,

Detroit, August 1, 1859.

Among the list of breeders, we note only one

from this State, namely, M. M. Ballard, of Niles, Berrien county. This gentleman has on record the following animals, and every one of them traces back to a herd book animal. This is a gratifying fact, and shows that the western part of this State possesses a herd of Devons as pure in blood as any that can be found in any State. We have had occasion to speak, in the FARMER of the excellence of the Devon stock of Mr. Ballard. The fact of purity of pedigree shows that the appearance of excellence in breeding which this stock evinced, was more than skin deep, and that its fitness was bred into it until it had become constitutional. We publish the names of the stock recorded by Mr. Ballard, as a return for the compliment he has paid us by forwarding a copy of the volume, the receipt of which is thus acknowledged:

Bulls. — Berrien 366; — Emperor 421; — Jack Downing 459; — Jack Downing, Jr. 460; — Major 476; — Napoleon 499; — Sir John 558; — Sultan 565; — Wyoming 595; — Vernon 579.*Cows and Heifers.* — Beauty 1172; — Beauty 1173; — Betty 1182; — Crescent 1212; — Curly 1220; — Dairy Maid 1226; — Hebe 1206; — Jenny Lind 1342; — Julia 1346; — Kate 1349; — Linda 1378; — Flower 1400; — Pebe 1443; — Premium 1447; — Rosa 1466; — Rose 1473; — Wyoming 1482; — Red Lady 1460.

The work is neatly printed, and the form of the pedigrees is such as to prove convenient for reference. There are several handsome engravings which embellish the volume, and are good portraits, as well as good examples of the perfect North Devon stock of cattle. We hope when the next volume issues to see the names of more of our Michigan breeders amongst those who have given this work their sanction and patronage.

Death of a Student.

By letters received from Lansing, we learn that death has made an entrance into the halls of the Agricultural College for the first time since its opening, and we have the painful duty of announcing the death of Edgar W. King, of Rives, Jackson county, a young man of much promise, and of the most excellent habits. The disease which occasion

The Household.

She looketh well to the ways of her household, and aeth not the bread of idleness.—PROVERBS.

EDITED BY MRS. L. B. ADAMS.

MARY McCURDY.

BY SLOW JAMIE.

A lonely child was Mary.
Like a wilding flower she grew.
No sister, no! nor brother,
Little Mary ever knew.

Fourteen summers she had gladdened
Her parent's fireside,
And her childhood fast was verging,
Into woman's stately pride.

We covered her as a woman,
We loved her as a child,
So quiet was her carriage,
Yet playful she smiled.

Her age was like the mingling
Of the darkness and the light,
When the beauty of the evening,
Meets the stillness of the night.

But Death, the envious tyrant,
Who is never satisfied,
Cast his greedy eyes upon her,
And he claimed her for his bride.

We refused; we begged; and struggled;
But he moved with sullen pace;
He touched her snowy forehead,
He breathed upon her face.

He was tired of our entreaty,
And she said, "Peace! Let me go."

So on a couch we laid her,
In her bridal chamber low.

But though she meekly yielded,
Well resigned to go with him,
Yet we wept that one so lovely,
Should wed a king so grim.

And we miss her, Oh! so sadly!
Oft forgetting she is gone,
Till we look towards her corner,
And see it dark and lone.

Ah! Death the king of terror!
He is greedy and he's strong;
Yet there is one more mighty
Who will right the tyrant's wrong.

He will come with countless angels;
The ancient hills shall shake.
He will sound the final trumpet;
The groaning earth shall quake.

And Death, the gloomy monarch,
Himself shall quake and flee,
And his rusty gates shall open,
To let the prisoners free.

And the coming King shall challenge
Mary, as his purchased bride.
And joyfully she'll answer
And hasten to his side.

Roll on ye rapid seasons
And bring the happy day,
When Jesus will return in power,
To frighten Death away.

And we'll go forth and see him,
With his glorious nuptial crown,
Wherewith all mirth graced him,
In the day that he came down.

And Mary oft will mention
To the wondering hosts above,
That her choice, though second bridegroom,
Was her first, her only love.

Women—What they are Doing.

"Queen Victoria and her royal family are making their annual visit to Scotland," says exchange No. 1.

"The Empress Eugenie has presented the splendid robe she wore at the christening of the Prince Imperial, to a newly inaugurated statue of the Holy Virgin." Ex. No. 2.

"Jenny Lind Goldschmidt is to sing in Belfast in October." Ex. No. 3.

"Mrs. Harriet Beecher Stowe is in England engaged in forwarding the Minister's Wooing." Ex. No. 4.

"Dr. Harriet K. Hunt has been preaching in a great many of the Universalist churches in Maine during the past summer." Ex. No. 5.

"Miss Mitchell is enjoying herself in making astronomical observations through her new telescope in Rhode Island." Ex. No. 6.

"Lucy Stone Blackwell and Ernestine Rose have been stamping the State of New York to drum up a Woman's Rights convention." Ex. No. 7.

"Mrs. Jane G. Swisshelm has been writing impudent verses to Geo. D. Prentice, and got back her own with interest." Ex. No. 8.

"Miss H. K. Clapp is going over the Rocky Mountains in full Bloomer costume, boots, pantaloons and hat, and Colt's revolvers buckled to her side." Ex. No. 9.

"Mrs. Bayard Taylor has gone to California with her husband." Ex. No. 10.

And so on, and so much for the celebrities, the famous women who get into the newspapers. Many more might be enumerated, but after all were told we should find that the proportion of famous women, or, rather, of publicly noted women, is very small in comparison to the noblest, and most truly honored class of all—home women. With Victoria's royal cortege or Eugenie's Catholic devotion, the world as it goes has little sympathy or interest; the queen of song is, like many another bird of passage, praised and potted while present, but not a necessity of life, and seldom missed when absent. The thoughtful writers and students among wo-

men are making a deeper and more general impression. They are doing a work which will outlast their own generation, and make nobler and better the hearts of men and women who come after them. The other restless spirits who are wandering to and fro in the earth, stirring up discussions, dissensions, rebellions; now pleading with woman's eloquence, now storming with unwomanly rage, bringing equivocal blessings upon equivocal measures, and trying to force the world into a position it seems most obstinately bent on not being forced into—they, too, are doing a work which will not all result in evil. They are making people *think*, and that is one great step towards accomplishing reformation. But better, lovelier, holier, purer, and doing a more noble work than any or all of these, are true home women, the wives and mothers of our land who are making their homes the nurseries of good and great men.

These women, thank heaven, are numberless in comparison to the few who have won a fleeting notoriety by the accident of position, or the fondness for adventure which has placed them prominently before the world.—Their names, perhaps, are never seen in the papers, or on the title pages of the ephemeral literature of the day. But their works are written in their lives, in the lives of their husbands and sons and daughters, and in the generations who shall follow them. They are the true reformers who take the evil where it springs and exterminate it by planting good in its place. A happy home is the place to make virtuous men, and to keep them so.

Not long since, an accident threw us in the way of one of these home reformers. One chill and rainy afternoon, a little less than a year ago, we were landed from the cars at a small village in one of the southern counties of this State. This was one of our business excursions, and the first object was to secure a horse and buggy and driver to be ready for a morning tour among subscribers in the neighborhood. The landlord of the only hotel was first applied to. "I don't think you'll find a critter in town," said he; "nor a buggy, nor a wagon, nor a cart big enough to draw a baby in. They're all gone to the great balloon and Sunday school celebration at Adrian, men, women, horses, carts, babies and all. May-be some of 'em will be home to-night or in the morning, and may be they won't. The only one I feel doubtful about being gone is Jemmy Sloman. He's got a horse and wagon, and knows everybody, and will be a first rate hand if he ain't gone. If he has, you'll jest have to wait till my teams comes home in the morning. That's Jemmy's house, away up yonder, about half mile, the third one this side of the hill. You'll know it when you come to it, by the back kitchen painted red, and the finnified fixins all about in the door yard."

With the red kitchen and the finnified fixins in our mind's eye, we set out for Jemmy Sloman's. The road was too muddy to walk in, and the only sidewalk was a narrow foot path running along through the deep, wet grass between the street and the yards and garden fences on the way. We followed the path, and wet and chilly enough, at length came in sight of the red kitchen, which was nothing more nor less than a loose board shanty, built against the back of the main building and stained with a paradoxical pinky-red whitewash. The house itself consisted of two parts, one a sort of wing to the other, and both low, old, unpainted and weather-beaten. By the "fixins" the landlord doubtless meant the neatly arranged flower beds and the ingenious home made trellises covered with creeping vines and climbing roses which ornamented the front yard. But we were too cold and wet to notice them closely then, and hurried up to the open door just as Mrs. Sloman came to shut it. Of course Jemmy had gone with the multitude to Adrian, and with his horse and wagon too, and would not return till the next day. But Mrs. Sloman asked us in to warm and dry by the kitchen fire. She had a flock of little ones about her, five or six in all, bright, wide awake little fellows, every one boys and all running at once, yet without confusion, to open the way to the kitchen and get the chairs ready for mother and the stranger.—An hour spent by that humble fireside was worth a whole year's session of a Woman's Rights convention. We venture to say that the influence of that gentle, quiet woman will be felt farther down through coming years than the sermons of the most eloquent of our sex can reach. If God spares her life and the lives of her boys, she, with her feeble hands and her strong mother love and good sense, will raise up six men of sterling worth, and purity of character such as can never come in later years to those who have not known in childhood the influence of a tender and judicious mother's care. If the seed is sown at the proper time, we cannot forget. You dream that a potato vine

may look for the harvest in due season; if not, when or what shall the harvest be?

Mrs. Sloman was a delicate looking little woman, such as we too often see in places where health and strength are most needed. She seemingly had little help from her husband in the way of getting along in the world, for all the evidences of industry around were plainly the work of woman's hands assisted by her childish aids, yet bright, cheerful and hopeful, she was leading her boys with a firm and gentle hand toward the noblest aims of life. They were her companions, her pupils, her little workmen, and it did not take half the time of our brief visit to prove how they loved and honored her, and in her all woman-kind. We could not help remarking on the manly reverence they seemed to pay her, and as she went with us to the gate on leaving she said:

"Too many mothers, and sisters too, make a sad mistake in the home education of boys. They are apt to think it is no matter how they look or how they act when there is no one around but the children.—They could not adopt a surer method to destroy in the minds of boys all those finer qualities we so much love in our own sex, and which are just as easily cultivated in men as women. We must show ourselves worthy of the love, respect and reverence of our boys at home, if we would make them worthy of the same regard from others when they go out into the world. They never will forget the lessons they learn from our examples, and, good or bad, they will be influenced by them all their lives."

This is the good and noble work which many thousands of unknown and unheard of women are engaged in doing, all through our wide-spread farming country, all through our quiet backwoods villages, and in our crowded cities too. No paper chronicles their names or deeds, they are not known in conventions, nor seen dragging silks and satins at fashionable lengths along the dusty pavement. These are the women of whom it is written, "Her children rise up and call her blessed."

RECOLLECTIONS OF IRELAND.

PREPARED FOR THE YOUTHFUL READERS OF THE MICHIGAN FARMER; BY SLOW JAMIE.

NUMBER SEVENTEEN.

August. This is a proper time to celebrate the praise of new potatoes, for although the Irish have them in July, still it is not till this month that they afford that dry, mealy substantial food which strengthens man's heart. When Billy McLaughlin got enough of liquor in him to make him feel happy, he always took a book and went to reading.—Whether it was a torn paper, an old almanac or a new book—whether the book was upside down or wrong end foremost, the reading was all the same. Sometimes it was a song.—Sometimes a story, but oftener a dissertation on the glory of lammas, and always began thus: "Lee! la! lo! loid! New Lammas! new praties! God be thankit! We'll get the wrinkles tuk out of our bellies!" A grand subject indeed, and one to which Billy could do ample justice, but which Slow Jamie feels himself incapable to handle. Still it is such a pleasant subject to expatiate on, that I cannot let it pass without a few remarks, and if I am pleasant on the subject my readers must not think I am not serious.

We will suppose it has been one of those

dear summers when a poor beggar boy would

not know for three months what it is to eat

a full meal, when the cotter children lived on

boiled nettles or cabbage, and when even the

farmers' children had to be stinted in order to

have something for the poor. But new pota-

toes have come at last. How sweet the vines

smell as you pull them up, with the round red

cup sticking to them. When boiled, the skin

cracks open and smiles at you. To mend the

matter, the huckster comes along driving his

jackass, with two creels full of fine fat herrings

for sale, two for a penny. But I do not

want fish now. Fish for dinner, but I want

some good sour buttermilk for supper. Why

the potatoes melt in our mouths. At all

events they melt away on the table, like

April snow before the morning sun. No won-

der; every face is shining like the sun; hard

for them to withstand the concentrated beams.

Don't insult me by mentioning pies and tarts.

These may do very well to tickle the palate.

They taste very well going down. But then!

Do they leave such a pleasing sensation of

fullness about the pit of the stomach? Do

they brace up the lungs and extend the rotu-

arity of the person with beauty as potatoes

do? Nonsense. Do not talk to me. None

but a Pennsylvania Dutchman fed on sour

crout knows anything like it. But the best

is coming yet. You are just going to bed.—

With what a pleasant laziness you roll over

on the Irish linen sheets. Softly and gently

sleep comes along, touches your toes, slips up

your limbs, fans your face, and steepes your

whole person in sweet forgetfulness. You

forget everything but potatoes, but them you

have grown up as high as a tree, and is loaded with the most delicious fruit. You are hurrying and climb up, limb after limb, and every bough has better fruit than the one below it. By the time you get to the top you can eat no more. You miss your hold and drop towards the ground. To your astonishment you find that you can fly. You soar aloft and sport with the larks, among the clouds. The birds are of great size, they have golden wings and sing the most delightful songs.—They swell their throats and trim their wings to please you. And the burden of their song is potatoes and buttermilk. They are so happy to find you among them. Gradually you lower yourself, a new feeling comes over you. You open your eyes, and find yourself in bed. The sun is shining through the window; yet you have not moved since you lay down last night. Instead of that headache which a supper of artificial luxuries would have induced, you feel your body vigorous and your spirits cheerful. When you say your prayers, you try to confess your sins, and express contrition, but you can think of nothing except thanksgiving, and when you go to work you keep humming psalms all the way. Even when you get hungry the sensation is pleasant for your think of potatoes. Do not think that this is a mere fancy sketch. Slow Jamie speaks from his own experience, and every true Irishman will attest that he says nothing but the naked truth.

But I must tell about the herrings, which abound during this month and indeed through the whole summer in the Irish Sea. I suppose you know that they come in great schools from the Arctic ocean. They leave the North in the middle of winter, but do not reach us till on in summer, when they can be caught in great numbers in nets, and with new potatoes are nourishing food.—They come in great numbers every year, but the tremendous schools which we have heard about, have not come this long time. On such occasions, the water for square miles would be as thick with them as the air with moths. My father said that when a school approached the shore at New Castle, which was nine miles distant, he could see the reflection of the light from their scales by night as well as by day. Some said that the school kept so close together that if the porpoise did not dash among them and scatter them the fisherman could not get among them with his boat. To catch them was no labor except to drag them out with the net. Often they could not get vessels enough to salt them down in, and loads were used for manure. Whenever there is anything really strange, fiction comes to carry it to the marvellous. Old men used to tell with perfect seriousness, how, if the fisherman went out on the Sabbath or even before midnight on Sabbath night, the fish would go off and not return for years. My father told, too, about two companies of fishermen meeting and fighting in their boats. They ran their boats together and beat one another with oars or sticks till their blood ran into the water. The result was that the herrings went off, and such a school had never come again. The fish must have been much more tender of other blood than their own. The grampus, the porpoise and the shark devour them by thousands, yet it never drives them off, but whenever human blood was spilled, they packed up and left! Joy go with them!

The Husband Who was to Mind the House.

[We copy the following significant little story from Dases' Tales of the Norse. The case of this "goody's" husband may be thought a very extreme one, but it illustrates a principle pretty well, and, to speak plain, we have known men, and women too, get their heads into a worse place than a porridge pot by attempting to manage other people's business instead of their own.]

Once on a time there was a man so surly and cross, he never thought his wife did anything right in the house. So one evening, in hay-making time, he came home, scolding and swearing, and showing his teeth and making a dust.

"Dear love, don't be angry; there's a good

man," said his goody; "to-morrow let's change

our work. I'll go out with the mowers and

mow, and you shall mind the house at home."

Yes! the husband thought that would do

very well. He was quite willing.

So, early next morning, his goody took a

scythe over her neck and went out into the

hay-field with the mowers, and began to mow;

but the man was to mind the house, and do

the work at home.

First of all, he wanted to churn the butter;

but when he had churned awhile, he got

thirsty

MICHIGAN FARMER.
R. F. JOHNSTONE, EDITOR.
Publication Office, 130 Jefferson Avenue.
DETROIT, MICHIGAN.

S. FOLSON,
WOOL DEALER,
90 Woodward Avenue,
DETROIT, MICHIGAN.

THE MARKETS.

Flour and Meal.

There has been considerable more activity in the market again this week induced by the improvement in breadstuffs in New York. The farmers neither in Europe nor America appear to be turning their grain out as freely as was expected, and this fact is probably in some measure the cause of the present advancing state of the markets. It is generally believed that the bareness of the market has rendered it very sensitive to the supplies, so much so, that prices are regulated almost entirely by the amount being marketed, and go up or down as the amount is less or greater.

Flour—The great bulk of the flour received at this point is sent forward on manufacturer's account, a very small portion being left on the market. This being the case, it is not surprising that it should be held so much above its true value for shipment, or that shippers should be driven entirely out of the market by high prices. As it is, prices are at least \$1.00 above what the same article would not in Liverpool and very much above the corresponding Boston or New York figures. What little flour is sent here is held firm at \$1.87 1/2 a bushel for the range of grades. The sales of course are trifling while this state of things exists and we hope soon to see a change.

Wheat—The market within a week has become moderately active and prices have advanced from \$1.01 1/2 to \$1.06 1/2 for white wheat the outside figure being obtainable for very choice. This advance has been brought about partly by several eastern orders that have been put on the market, and partly by some speculative demand at home. At these figures the demand largely exceeds the supply and there is no immediate prospect of a decline. A considerable amount has changed hands. We quote red wheat 95c a bushel, and a good article of white at \$1.10.

Corn—Corn continues very scarce and holders have advanced their figures to 75c. There is not much inquiry and transactions are very light.

Oats—Scarcely any oats are being received and the stock in the city is very small; still there does not appear to be much demand. The nominal quotations are 31c.

Rye—Is wanted for distilling purposes, and for it \$1.05 a bushel per cwt. is paid.

Barley—Is also in demand for malting, and would readily command \$1.12 1/2 per cwt. We hear of no transactions.

Potatoes—Very dull and plenty at 25c a bushel from wagons. As the Ohio markets are now well supplied there does not appear any immediate outside demand and the prospect is that low prices will rule yet for some time.

Eggs—The market for a week past has been 11c by the barrel or 12c in smaller quantities, but toward the close prices declined slightly and we now quote 10c 10 1/2 c and 11c.

Butter remains unchanged the demand being fair at 14c for firkin and 16c for prime roll.

At Kalamazoo, on Tuesday, wheat was quoted 75c and 90c, and at Ann Arbor, on the same day, 80c and 90c.

At Chicago on Tuesday, winter wheat was in fair demand at \$1.04 for No. 1 white, 90c for No. 1 red, 90c for No. 2 white, 75c for No. 2 red, 75c for No. 1 spring and 75c for No. 2 for No. 2 spring. Corn 75c for No. 1 and 80c for No. 2, rye 61c for No. 1, barley 62c for No. 1, oats 63c for No. 1.

At Cleveland, on the 27th, red wheat brought \$1.05, mixed \$1.07 and rye 75c.

At Toledo, on the same day, red wheat was worth 98c.

At Buffalo, on Wednesday, flour was firm at \$4.62 1/2, \$4.87 1/2 for extra Michigan and Indiana. Wheat firm at 90c for Chicago spring and Milwaukee club. Oats firm at 36c.

At Rochester, on Tuesday, the market was active. The outside price for choice extra flour was 75c.

At Albany flour had an upward tendency. Milwaukee club wheat \$1.00. Oats 42c.

At Oswego, wheat was in good demand at \$1.14 for white Canadian and 90c for No. 1 Chicago. Corn scarce and wanted. Rye in demand at 72c.

At New York, on Wednesday, flour was quoted improving with extra western at \$4.80 and 10. White Indian wheat brought \$1.25 and 10. White 1 Chicago \$1. Rye 8c; barley 65c; corn 90c; oats 44c.

Live Stock, &c.

We note no change of moment in live stock this week. All kinds are plenty. Bees continue to sell at \$2.00 per cwt. gross for good quality. 100 sheep sold yesterday at \$2.25 per head and lambs are worth \$1.25 a head. Pork may be a shade lower, the sales during the week being mostly at \$5.50 per 100 lbs net, but the market is very quiet.

At Albany, on Monday, there was a falling off in the receipts as compared with last week, of 350 head, but still the supply was fully adequate to the demand, or, rather in excess. The market opened dull, and everything indicated that it will be some time before it completely recovers from the flatness that has marked the trade, more or less, during the past eight or ten weeks. There was no improvement in the quality of the stock as compared with last week. Although there were some good beees offered, large numbers of very inferior cattle were on the market, and this is accounted for by the high price of corn. The market was dull at the following quotations:

	This week.	Last week.
Superior.....	45c	45c
First quality.....	45c	45c
Second quality.....	3	45c
Third quality.....	2 1/2c	2 1/2c
inferior.....	2	2 1/2c

At New York the telegraph reports business in beees dull and prices on the average 1/2 cent lower. The range of quotations on Wednesday was 45c to 49c, and the average price 47c. Receipts \$200.

Wool.

The N. Y. Economist says: "Since last there has been a good inquiry for domestic wool from the trade and from manufacturers at full prices. Among the sales are 650 bales California, of recent receipt, and 150,000 lbs pulled on private terms, part of the latter sold to go into second hands—and 150,000 lbs to receive \$140,000 cash. In foreign we can report no sales or change in prices."

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F. E. ELDEED.

Detroit, January 1859. 115

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1859. SUMMER ARRANGEMENT. 1859.

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